

**NANYANG
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Experiment 1: Parametric Curves

CZ2003 Computer Graphics and Visualization

SS3

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1 DEFINING SURFACES PARAMETRICALLY

1.1 Plane Passing Through Three Defined Points

To define the plane parametrically, we can use the following formula: $P = P_1 + u(P_2 - P_1) + v(P_3 - P_1)$

Therefore, with the 3 points $(N, M, 0)$, $(0, M, N)$, $(N, 0, M)$, we get:

$$x(u, v) = N - Nu = 8 - 8u$$

$$y(u, v) = M + Mv = 10 + 10v$$

$$z(u, v) = Nu + Mv = 8u + 10v$$

$$u, v \in [0, 1]$$

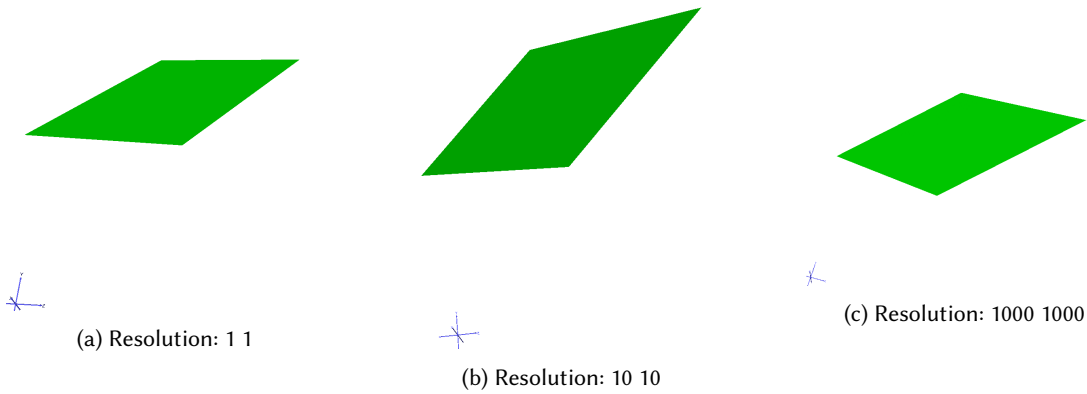


Fig. 1. Plots of the plane defined in "1a.wrl" with differing resolutions

As seen in Fig. 1 above, a sampling resolution of **1** for both u and v is sufficient for drawing the plane as it has no curvature and having a higher resolution would produce the exact same drawing.